

**REMARKS**

Claims 1-14 and 16-22 have been examined and are all the claims pending in the application.

Applicants respectfully request that the primary examiner consider all the documents listed in PTO Form 1449 (modified) that were submitted with applicants' Information Disclosure Statement filed on January 23, 2003 and indicate such consideration to the applicants in the next Office communication.

**Objection to the Specification**

The primary examiner objects to the specification. Applicants amend the specification to address the issues raised by the primary examiner on page 2, first full paragraph of the final Office action. Applicants respectfully request that the primary examiner withdraw the objection to the specification.

**Objection to the Drawings**

The primary examiner objects to the drawings under 37 C.F.R. § 1.83(a). In particular, the primary examiner states that the features of claims 9 and 12 must be shown. The proposed drawing corrections filed April 23, 2003, for Figures 3 and 8 show the features of claims 9 and 12.

In particular, with respect to claim 9, Figure 8 illustrates movable dielectric member 1 interposed between said dielectric circuit board 12 and ground plane member 14. Also, with respect to claim 12, Figure 3 illustrates adjustment means which includes remotely controllable servomechanisms 23, 24.

Accordingly, applicants respectfully request that the primary examiner withdraw this objection.

### **Objection to Claim 20**

The primary examiner objects to claim 20 because line 5 recites which “form” a transmission line network. Applicants respectfully disagree that line 5 rises to the level of warranting an objection to claim 20. The primary examiner’s objection is based on claim drafting style.

However, in the interest of expediency, applicants amend this aspect of claim 20. Accordingly, applicants respectfully request that the primary examiner withdraw the objection to claim 20.

### **Rejection of Claims 1-14 and 16-22 under 35 U.S.C. § 112, first paragraph**

The primary examiner rejects claims 1-14 and 16-22 under 35 U.S.C. § 112, first paragraph, as allegedly containing subject matter which was not described in the specification in

such a way as to enable one skilled in the art to which it pertains, to make and/or use the invention. Applicants respectfully traverse this rejection.

The primary examiner alleges with respect to claims 1 and 20 that “computer optimization means” for providing “aggregate reflection of signals...,” is not adequately described in the specification to enable a skilled artisan to make and use the invention intended by the applicants.

As a preliminary matter, applicants respectfully note that the multi-band antenna system of claim 20 does not recite “the computer optimization means.”

Additionally, the primary examiner alleges that applicants argued that one skilled in the art, given the disclosure of this application along with common knowledge in the art, would have been able to make and use the invention without “undue experimentation.”

Applicants respectfully submit that the primary examiner’s characterization of applicants’ arguments set forth in the Amendment filed on April 23, 2003 (hereinafter previous Amendment) is misleading in that, while applicants concluded in their arguments that applicants’ specification comports with the requirements of 35 U.S.C. § 112, first paragraph (see page 10, first full paragraph of previous Amendment), applicants discussed on pages 9 and 10 why this is so. However, the primary examiner’s remarks on page 3 of the final Office action do not address applicants’ arguments set forth in the previous Amendment.

Accordingly, applicants incorporate by reference herein the arguments set forth in the previous Amendment beginning on page 9 through page 10. Additionally, applicants provide the following supplemental remarks.

Applicants have already pointed out to the primary examiner that U.S. Patent No. 5,905,462 (hereinafter Hampel ‘462) describes using a simulator (i.e., software) to calculate expressions that relate to the thickness and width of a layer of dielectric material and to that layer’s effect on line impedance. (Col. 9, lines 30-43). Also known, from the prior art of record, is the relationship between the phase of a signal and the extent to which a planar dielectric member overlaps. (See, e.g., *previously cited* U.S. Patent No. 6,441,700 B2 (hereinafter Xu) - Background of the Invention).

However, the primary examiner emphasizes that it is “the aggregation of reflections which appears to be critical to analyzing and optimizing the shape of each phase shift finger.” (Page 3, lines 11-13 of the final Office action).

It is well known and understood by those skilled in the art that when two interconnected sections of a transmission line have different impedances, the impedance mismatch causes a partial reflection of a signal traveling through such line sections. (See col. 3, lines 28-51 of U.S. Patent No. 5,940,030 (hereinafter Hampel ‘030); see also col. 3, lines 11-25 of Hampel ‘462 ). Accordingly, the primary examiner should concede that those skilled in the art understand and can measure signal reflection.

Page 5, lines 17-22 of applicants’ specification discloses for one illustrative, non-limiting embodiment, that for one specific phase shift and desired frequency range, the lengths of nine

elements (i.e., five segments and four gaps) can be adjusted and optimized (minimizing aggregate signal reflection) by using known commercially available radio frequency circuit analysis and optimization software. Applicants note that the primary examiner has not presented any arguments that such commercially available radio frequency circuit analysis and optimization software does not exist or is not known. Accordingly, applicants assume the primary examiner concedes on this point.

Next, applicants disclose that the lengths and equivalent transmission lines represent the optimum lengths of the dielectric segments and gaps. (Page 5, lines 22-25). Applicants disclose that the same process is then repeated again and again for different phase shift values desired. (Page 5, lines 25-26). Finally, the various lengths and widths are joined to produce the profiles of the segments, which are subsequently used to produce the complex shaped segments of the dielectric element. (Page 5, lines 28-32).

Thus, applicants respectfully disagree with the primary examiner that applicants' disclosure would not enable one skilled in the art to make or use the present invention. Moreover, applicants have not presented "a mere assertion" that applicants' disclosure comports with the requirements of 35 U.S.C. § 112, first paragraph. On the contrary, applicants provide a detailed explanation as to why this is so in connection with what has been disclosed in the specification coupled with information known in the art.

In view of the above, applicants respectfully disagree that "explicit information" pertaining to the aggregation of reflections is critical to the understanding of the invention, but such explicit information is absent. (See page 3, lines 11-14 of the final Office action). The

concept of the aggregation of reflections and the design of the dielectric segments and gaps is disclosed in applicants' specification in such a way that one skilled in the art would be able to make or use the present invention, as claimed.

Notwithstanding, the primary examiner fails to establish that, in view of the alleged absence of "explicit information," one skilled in the art would have to resort to undue experimentation. Indeed, even if, assuming *arguendo*, that some experimentation is required to practice the claimed invention, this is permissible, so long as it is not undue. *Atlas Powder Co. v. E.I. DuPont De Nemours & Co.*, 750 F.2d 1569, 1576, 224 USPQ 409, 413 (Fed. Cir. 1984).

Applicants respectfully submit the primary examiner fails to establish that applicants' disclosure does not comply with the requirements of 35 U.S.C. § 112, first paragraph. Indeed, to the contrary, it is respectfully submitted that, for at least the reasons presented above, applicants' specification comports with the requirements of 35 U.S.C. § 112, first paragraph. Accordingly, applicants respectfully request that the rejection of claims 1-14 and 16-22 under 35 U.S.C. § 112, first paragraph, be withdrawn.

#### **Rejection of Claims 20-22 under 35 U.S.C. § 103(a)**

The primary examiner rejects claims 20-22 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hampel '462. Applicants respectfully traverse this rejection.

With respect to claim 20, the grounds of rejection fail to address the distribution element that includes a planar dielectric circuit board and conductive tracks which comprises a transmission line network for splitting a signal.

MPEP §2142 (Legal Concept of Prima Facie Obviousness)(8<sup>th</sup> Edition) states that the examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness. *Id.*

Notwithstanding, Hampel '462 clearly fails to teach or suggest the claimed distribution element. Further, applicants amend claim 20 to include that at least two of the interactive segments are shaped differently from one another.

Accordingly, applicants respectfully request that the rejection of claims 20-22 be withdrawn.

### **Conclusion**

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

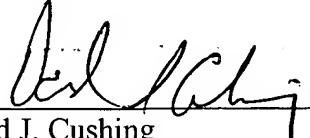
The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any

Amendment  
U.S. Application No. 10/003,071

Attorney Docket No. Q67567  
Art Unit 2817

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Respectfully submitted,



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**23373**  
CUSTOMER NUMBER

Date: December 2, 2003